



The ecology, distribution, status, threats, and conservation of the Common Water Monitor (*Varanus salvator*) in the Dholeswari River of Assam, India

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Abstract.—The Common Water Monitor, *Varanus salvator* (Laurenti, 1768), is a large monitor lizard distributed in southern and south-east Asia, including India which remains closely associated with water bodies, such as rivers and lakes. Although IUCN considers it to be ‘Least Concern,’ the Common Monitor Lizard faces several threats throughout its global distribution range, and the status of the species is decreasing rapidly. The Dholeswari River of Assam (India) is one of the most important abodes of this species, where it is locally known by the names ‘Irong’ and ‘Shanda.’ Geographically, the Dholeswari River is located in southern Assam (India), which falls within the Indo-Burma Biodiversity hotspot area. Unfortunately, most of the wildlife of southern Assam (India) are poorly studied, and this varanid is one of the most ignored species of the region. The present study was conducted along the Dholeswari River, Assam, India, to elucidate the distribution, status, ecology, threats, and conservation of the Common Water Monitor, and is the first report on this species from this river. The results show that the Dholeswari River still serves as a habitat of the species, with a viable population. Further, the species was found to prefer smaller rivers with clayed soil and bushes, and it faces major threats from habitat destruction, hunting for flesh and oil, and conflicts with humans. Based on our observations, we discuss recommendations for the conservation of this large varanid.

Keywords. Asia, Barak Valley, Indo-Burma Biodiversity hotspot, Reptilia, Sauria, Varanidae

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Introduction

The Common Water Monitor (*Varanus salvator*) is the largest monitor lizard of India, and second largest of the world, after the Komodo Dragon (*V. komodoensis*). It has the widest global distribution among all varanids (Traeholt 1994). The distribution of the species in the Indian subcontinent was described by Das (1994), Daniel (1983), and Koch et al. (2013), while Smith (1935) reported its occurrence and distribution in Northeast India, of which the state of Assam is a part. Anderson (1982) and Auffenberg (1986) reported the occurrence of this species from Assam (India). Among the four recognized subspecies of the Common Water Monitor, *V. s. macromaculatus* occurs in Assam (Traeholt 1994; Auffenberg 1986). The Common Water Monitor is generally found associated with water systems including

rivers and wetlands (Ahmed et al. 2009; Cota et al. 2009). It is seldom found far from water (Smith 1935), and only rarely beyond 200 m from water bodies (Cota et al. 2009). The Common Water Monitor has a wide trophic niche, and it consumes a variety of prey species including crabs, fishes, other lizards, snakes, domestic fowl, and eggs of other animals, in addition to scavenging (Ahmed et al. 2009).

Some of the important publications on the reptiles of Northeast India include Ahmed et al. (2009), Das (2008), and Choudhury (1989, 1992, 1993a,b, 1995, 1996a,b, 1998, 2011). However, none of these articles provide special treatment of either the Common Water Monitor, or southern Assam. Southern Assam (India), is also known as the Barak Valley, and comprises the districts of Cachar, Hailakandi, and Karimganj. It is a part of the Indo-Burma Biodiversity hotspot, and

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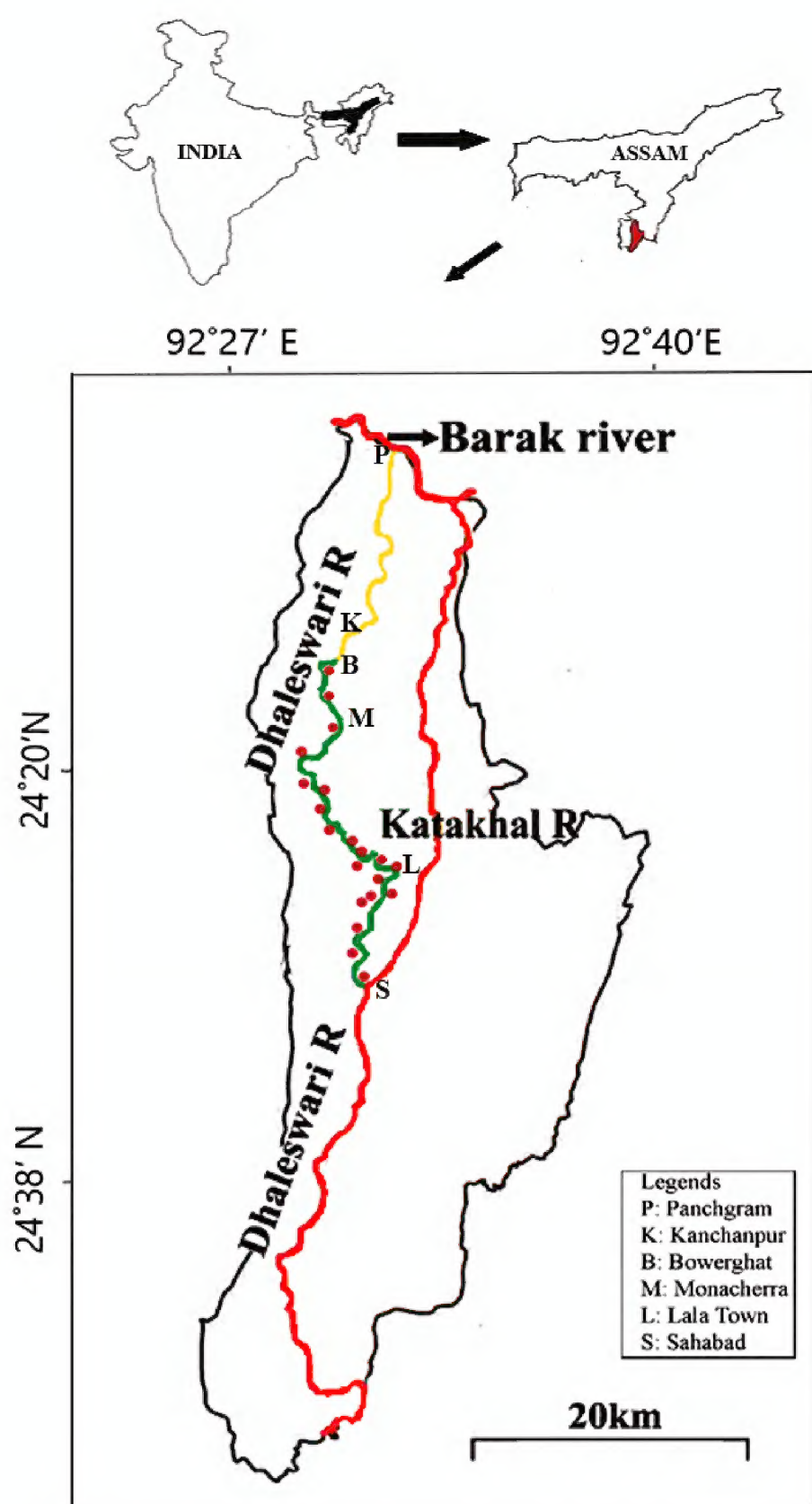


Fig. 1. (A) Map of India, highlighting Assam. (B) Map of Assam, highlighting Hailakandi district. (C) Map of Hailakandi district showing the two rivers, Dholeswari River and Katakhal River, with distribution of the Common Water Monitor (*Varanus salvator*). Dots represent sighting locations during the present survey; current distribution in the Dholeswari River is shown in green. Further downstream, despite no present records, occurrence in the past (1970s–1980s) was reported by several interviewees (shown in yellow). No reports on present occurrence in the Katakhal River (shown in red) could be found. *Map by A.S. Choudhury.*

harbors a myriad wildlife assemblage (Myers et al. 2000; Choudhury 1997, 2013; Mazumder 2014), including a diverse herpetofauna (Ahmed et al. 2009). Two species of monitor lizard are reported to inhabit the region, the Bengal Monitor (*Varanus bengalensis*) [Das 2008] and the Common Water Monitor (*Varanus salvator*) [Ahmed et al. 2009; Whitaker and Whitaker 1980]. Once common in most of the rivers of Assam, the habitat of the Common Water Monitor is decreasing rapidly (Ahmed et al. 2009), although its IUCN status currently remains Least Concern (Bennet et al. 2010).

The present study was conducted in the Dholeswari River of southern Assam (India) to elucidate the distribution (past and current), status, ecology (behavior and habitat), threats, and conservation of the Common Water Monitor. Based on the findings of this study, we provide recommendations for the conservation of this species. The present study is particularly important since some of the majestic mega-fauna of southern Assam, including Gaur (*Bos gaurus*), Asiatic Wild Water Buffalo (*Bubalus arnee*), Indian One-horned Rhino (*Rhinoceros unicornis*), Sumatran Rhino (*Dicerorhinus sumatrensis*), Javan Rhino (*R. sondaicus*), Royal Bengal Tiger (*Panthera tigris*), and notably two mega-reptiles: the Gharial (*Gavialis gangeticus*) and Marsh Crocodile (*Crocodylus palustris*), have been extirpated in the last century (Choudhury 1997, 1998, 2013, 2016; Singha 2009), while the Ganges River Dolphin (*Platanista gangetica gangetica*) is on the brink of extirpation (Mazumder et al. 2014).

Materials and Methods

Study site. The present study was conducted in the Dholeswari River, located in the district of Hailakandi, in southern Assam of India. The climate is of the tropical monsoon type, with average elevation of 21 m asl, average annual precipitation of 2,400–2,800 mm, and the temperature varies from 37 °C in the summer to 7 °C in the winter (Choudhury and Choudhury 2017). The Dholeswari River originates in the Mizo Hills in the state Mizoram (India), flows through hilly terrains towards north, and enters the Hailakandi district. Further downstream, the river bifurcates at Shahabad (Gainja-Khauri) of Hailakandi (24°28'51.8"N, 92°34'38.3"E), whereby its water is diverted to an artificial channel now called Katakhal River with a sluice gate, thereby eliminating the immediate downstream section. However, further downstream, smaller streams join the river, thereby enhancing its flow discharge, and it finally drains into the Barak River at Panchgram, Hailakandi (24°51'54"N, 92°36'32"E; Fig. 1). The length of the river from Shahabad to Panchgram is approximately 110 km, with an elevation ranging from 20–33 m. The river is almost dry with no flow in the winter season, especially in the upstream half of its length, while significant flow is attained in the monsoon season (April to October).

The present study was conducted in a stretch of the river from Shahabad (24°28'51.8"N, 92°34'38.3"E) to Bowerghat (24°38'37.4"N, 92°32'13"E), covering an approximate length of 56 km. The area is inhabited by Bengali community people who cultivate rice paddies (between June and November) in the plain areas, and vegetables (between November and March) in the plains as well as on the river banks. The river bank has an abundance of bushes and bamboo groves, as well as large trees. Brief surveys were also made in the Katakhal River (the other river of Hailakandi district) from Sahabad to

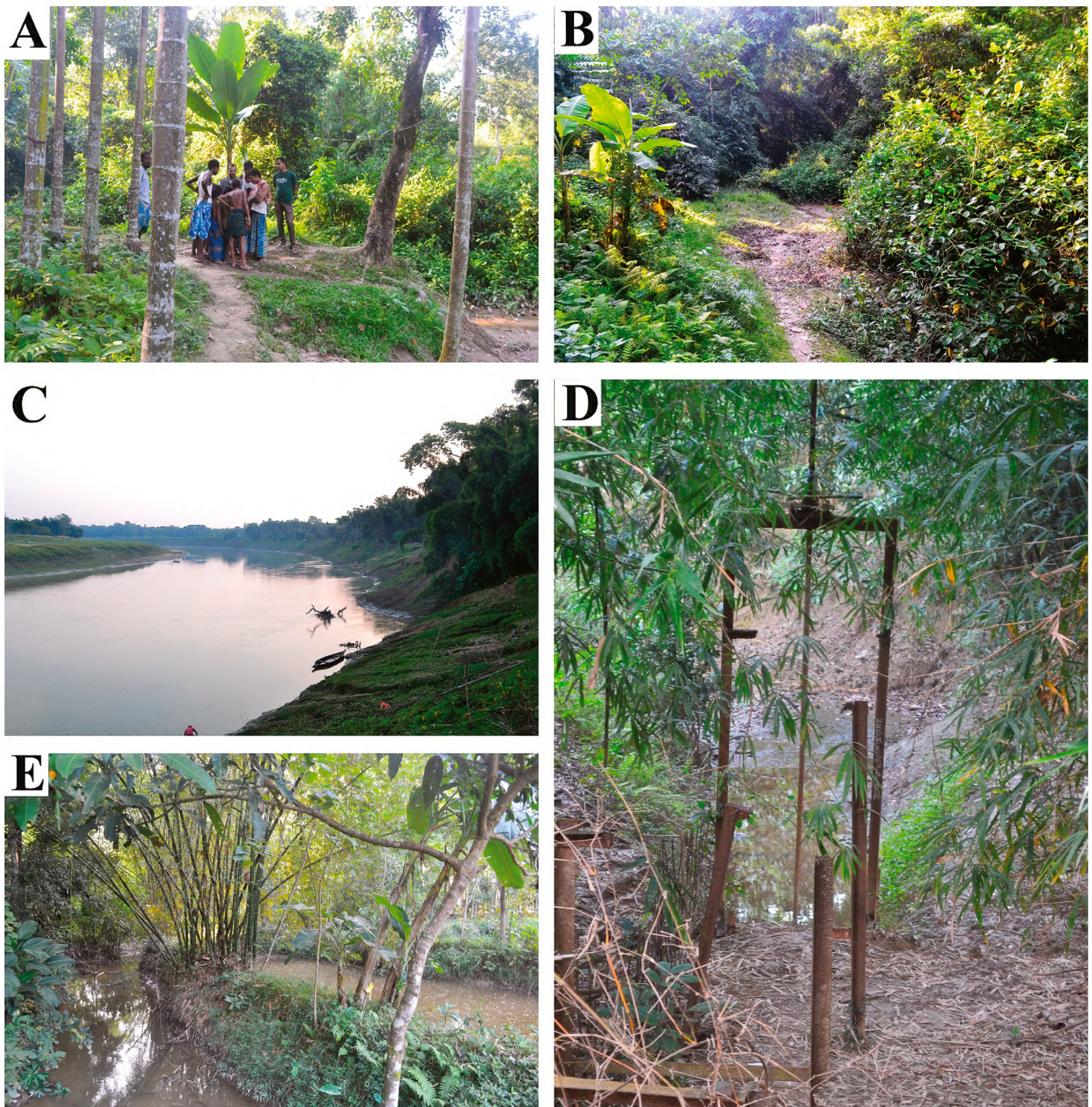


Fig. 2. Photographs relevant to the habitat and threats of the Common Water Monitor (*Varanus salvator*) in the Dhaleswari River, Assam, India. (A) Research team interacting with the locals at Rongpur 5, Hailakandi. (B) Habitat of the Common Water Monitor in the Dhaleswari River, showing bushes and other features on the banks. (C) The sandy bank of the Katakhal River, prone to erosion and landslides, is the habitat not preferred by the Common Water Monitor. (D) The sluice gate at the mouth of Dhaleswari River at Shahabad, which prevents water flow into it and diverts the water to the Katakhal River. (E) Encroachment and conversion of the Dhaleswari River into fisheries by the locals building dikes at Rongpur 2. Photos by A.S. Choudhury.

its confluence with the Barak River at Katakhal Mukh (24°51'21"N, 92°37'27"E; Fig. 1). The Katakhal River has greater depth, width, flow rate, and flow discharge, and it has abrupt banks (with sandy soil) which experience frequent and severe erosion and landslides.

Survey techniques. Preliminary discussions with the riparian local people and forest officials were conducted to locate extant populations in the Dhaleswari and Katakhal rivers of Hailakandi, southern Assam. The discussions revealed that the Common Water Monitor

does not occur in the Katakhal River, while it continues to inhabit the Dhaleswari River between Shahabad and Bowerghat (Fig. 1). Two researchers independently carried out an on-foot survey simultaneously along both banks of the Dhaleswari River, covering a length of 56 km (of the total river length of ~110 km), from Shahabad to Bowerghat, to conduct focal counts of the species and the number of nests available in the river bank. The burrows made by the lizard were considered to be nests, while others, including crevices and burrows of other animals, were considered temporary refuges. The

Table 1. Geo-coordinates of locations along the Dhaleswari River, Assam, India, where live specimens of the Common Water Monitor (*Varanus salvator*) were sighted during the survey, including the number of individuals sighted at each location.

Site No.	Location	Geo-coordinates		No. of individuals sighted
		Latitude	Longitude	
1	Shahbad	24°28'51.8"N	92°34'38.3"E	1
2	Shahabad 1	24°29'31"N	92°34'33"E	1
3	Rongpur 2	24°30'18.4"N	92°34'39.8"E	1
4	Rongpur 5	24°31'31"N	92°34'36"E	1
5	Rongpur 5	24°31'39.7"N	92°35'00.7"E	2
6	Rongpur 4	24°31'42.6"N	92°34'57.7"E	2
7	Abdullahpur 1	24°32'08"N	92°35'23"E	2
8	Tantoo Road Bridge	24°32'22.1"N	92°35'33.2"E	1
9	Dhanipur	24°33'29"N	92°35'48"E	2
10	Lala Rural College	24°33'32"N	92°36'12"E	2
11	Lalaghat Nala confluence	24°33'36"N	92°35'21"E	3
12	Kaya Khal confluence	24°34'00"N	92°34'24"E	2
13	Bhabanipur	24°34'19"N	92°34'54"E	2
14	Sarbanandapur	24°34'19"N	92°34'51"E	1
15	Behula	24°34'44"N	92°34'03"E	1
16	Aenakhil Tea Factory	24°35'18"N	92°33'04"E	1
17	Aenakhil Market	24°35'55"N	92°32'52"E	1
18	Monacherra (Lakhinagar)	24°36'45"N	92°32'54"E	3
19	Kukinagar	24°37'26"N	92°32'22"E	2
20	Bowerghat	24°38'37.4"N	92°32'13"E	1

diameter of each nest hole was measured and topology was identified whenever possible. Different types of nests were recorded, which were verified by local guides. Upon sighting of a lizard, the Global Positioning System (GPS) coordinates were recorded using a digital GPS machine (eTrex 20X, Garmin, China). The surveyors made keen observations in the trees for possible occurrences of the varanid, since this species has been reported to climb trees for basking (Ahmed et al. 2009). Since no specimens were found in the Dhaleswari River further downstream of Bowerghat, or in the Katakhal River, those negative data are not incorporated into the further analysis. The total time spent in the field survey, for direct observations and counting of the lizards, was 118 h for each observer. In addition, potential threats to the monitor lizard and its habitat were observed during the survey.

Interviews of local people. Interviews of the locals ($n = 30$), generally the older folks, were conducted regarding the occurrence of the lizards, their nesting places, food, incidences of hunting, and potential conflicts (Fig. 2A). In addition to the local people of the area, many others hailing from different localities in southern Assam were also interviewed to get an idea of the past and present occurrences of the monitor lizard in the Hailakandi district, and in the Dhaleswari River and Katakhal River in particular. The interviews used colored photographs, pictorial guides and sketches, and

a closed-ended questionnaire. The total time spent on the interviews was 55 h.

Results

Distribution and Population Status

Past and current distribution. Interactions with local people, forest personnel, and elderly people of the villages revealed that in the 1970s, the whole length of the Dhaleswari River (~110 km) had viable and abundant populations of the Common Water Monitor. However, the population declined gradually, and the species currently inhabits only the section of the river between Shahabad and Bowerghat (Fig. 1). The species also occurs in the tributaries or smaller water channels (*nullahs*) joining the Dhaleswari River in this river section, most importantly the Lalaghat Nala, Kaya Khal, and others. In addition, stray individuals have been reported from Kanchanpur (~10 km downstream of the current range). It is often found near human habitations, crop fields, ponds, and lakes near the current main distribution range. Neither interviews nor surveys revealed the occurrence of this species in the Katakhal River, and we therefore argue that the species has been extirpated from this river.

Population status. During the study, 32 individuals were directly sighted at 20 locations in the 56 km of the river

section surveyed, for a linear density of 0.57 individuals/km of the river course (Table 1). The total number of active nests found during the survey was 215, for a linear density of 3.84 nests/km of the river section. In addition, the survey found 63 burrows and crevices which were used by the lizards as refuges.

Ecology

Habitat and nesting ecology. The current habitat of the monitor in the Dhaleswari River includes areas with river channel widths of 1–5 m in the winter months, with no water present. However, in the monsoon season, the river width may reach up to 30 m, with significant flow and discharge. The depth of the river in the study area varies from 0–10 m. The width of the river bank is 10–30 m, and the banks become flooded with the high waters of the monsoons. The river banks are inclined, and not vertically abrupt. The approximate distances of human habitations from the river bank range from 5–50 m. The river bank is characterized by the presence of bushes, secondary tree growth, planted woodlands, bamboo groves, and occasional crop fields (mainly vegetables), with or without bamboo fencing (Fig. 2B). However, the lizard is absent in the Katakhal River, which indicates that it does not prefer a river where flow and discharge are high, and banks are abrupt and steep with sandy soil which are prone to erosion (Fig. 2C).

The lizard made nests in the inclined river banks in areas where anthropogenic pressure is less intensive. The diameters of the nest entrance holes were 20–25 cm (23.59 ± 1.14 cm; mean \pm SD; $n = 40$). The vicinity of the nests was very clean, due to movement of the lizards, while the entries of some nests were half-sealed with soil. The entries of the nests were horizontal, or inclined downward or upward; however, the tunnel rose upwards immediately at an approximate distance of ~ 0.3 – 0.6 m from the entrance hole. Several other micro-habitats were found, which were natural crevices or burrows of other animals that were used by the monitors, probably as refuges. In these larger crevices, the lizards generally occurred in groups of several individuals.

Behavioral ecology. During winter months, the Common Water Monitor basks in the sun, and has been found to climb trees for basking, especially in the morning. During monsoons, the river water level increased and the nests were flooded. This factor drove the monitors to hide in the bushes, forage near human settlements, and shelter in trees. According to the locals ($n = 30$), the monitor has been found to feed on fishes, snakes, small lizards, crabs, and carcasses of other larger animals which were thrown into the river. There are several poultry farms near the river banks, as well as slaughter houses near populated areas, and people often dispose of carcasses and remnants of slaughtered animals in the rivers. In such places, the Common Water Monitor was frequently encountered.

Monitors with newborns were observed in the month of April, suggesting that eggs hatched in the early monsoon showers which coincided with the nests becoming submerged by flood waters. Also, the abundance of fish and other prey organisms were greater in this season, thereby making it more suitable for the newborns.

Threats

Like any other aquatic or water body associated species, and the monitors of other habitats, there are several threats to the Common Water Monitors in the Dhaleswari River, which threaten the survival of the species.

Habitat loss and destruction. Most of the rivers of Assam (India) are under immense human pressure due to pollution, overfishing, extraction of water for agricultural and domestic uses, encroachment, and other uses; and the Dhaleswari River is no exception. The diversion of the river water to the Katakhal River by the sluice gate at Shahabad (Fig. 2D) has led to a decline in available water in the parent stream, and a loss of biodiversity. This water diversion also invites cultivation on the river banks. In several places on the banks, people made fences of bamboo or steel wire, thereby reducing the available space for the lizards on the banks. However, due to decreased river flow, erosion, and land-slides, many sections of the river could not be studied.

The Dhaleswari River is highly polluted due to dumping of domestic and agricultural wastes, sewage, carcasses of animals, and other refuse. All the wastes which are dumped continue to accumulate until the next monsoon. This leads to deterioration of water quality, and thereby causes depletion of aquatic diversity and prey species, although it does not appear to harm the lizards directly.

Prey species depletion. The Dhaleswari River does not maintain water flow in the winter months, and it fully dries up gradually upstream. In addition, people make dikes in the banks to catch any remaining fish left in the river, and these dikes are used for human movement as well. Unfortunately, the upstream section of the river has been encroached and converted into fisheries, and flow in certain areas has been diverted resulting in extremely narrow channels (Fig. 2E). In this situation, prey species, mainly fishes and those dependent on the fishes, barely remain in the river. The severe prey depletion is thus among the most important threats to the Common Water Monitor in this river.

Hunting. Unfortunately, there were several instances of hunting of the Common Water Monitor throughout its range in the river. It is poached for meat, and also for oil. The tribal community people of the region, mainly the *Manipuri*, *Khasi*, *Mizo*, *Naga*, Tea tribes, and others, hunt the monitor as a protein source. The oil extracted



Fig. 3. A Common Water Monitor (*Varanus salvator*) killed for venturing into a human habitation at Rongpur 6, Hailakandi. It was subsequently buried. Photo by R.A. Barbhuiya.

from the base of the tail of the lizard, called *Shandar tel* ('Oil of the Monitor lizard' in the local language), is used as a sexual lubricant by man. Although the Bengali community people, who are the majority in the present study area, do not consume the lizard themselves, they catch any individuals that venture into the settlements and sell them to the tribes. A moderate sized individual may cost up to 1,000–1,500 INR (~14–21 USD), while the oil is sold at the rate of 500 INR/L (~7 USD).

Human-monitor lizard conflicts. During the monsoon months, the preferred sites of nesting or refuge are submerged, and thus the lizards venture into human habitations for foraging, mainly in the afternoon hours. They often prey on domestic poultry or venture into artificial ponds and prey on fishes. Thus, the local people who do not consume the meat of the lizard consider them to be pests and often kill them. Such killing is an age-old practice. In addition, many people (mainly children) believe that the lizard may physically harm them, or even kill them, and that the bite of the lizard is poisonous. Thus, the local people often harm the Common Water Monitor whenever it occurs within their reach. Despite occasional attacks on domestic animals and venturing into ponds, the lizard was not reported by any of the respondents to actually attack man. In 2011, one individual was caught from village Kanchanpur, and killed (Saifur Rahman Laskar, Kanchanpur, pers. comm.). According

to the interviewees, there were about 25 (range 20–30) incidences of hunting Common Water Monitors in 2014 in the study area. In the month of August 2015, as many as six cases of such hunting were recorded from the river section between Bowerghat and Monacherra, a stretch of ~5 km. On 5 September 2015, one lizard ~1.8 m long (Fig. 3) was killed from Rongpur 6 village for attacking poultry, and subsequently buried. However, since the responses of only 30 interviewees were taken, the exact number of incidences is estimated to be much higher than is indicated here.

Lack of research and awareness. Unfortunately, the Common Water Monitors are the least studied of the large animals in the region. To the best of our knowledge, there are no reports on the Common Water Monitors from this region, save for the few records simply reporting its occurrence, and no mentions in the literature of its occurrence in Dhaleswari River. Moreover, no specific awareness campaign has yet been undertaken to educate the locals, and the lizard remains among the most ignored wildlife of the region.

Discussion

The freshwater bodies of the world, both lotic and lentic, are habitats with highly diverse wildlife assemblages as well as immense anthropogenic pressures, which threaten the survival of these species (Dudgeon 2000). Amidst a myriad of threats, the Common Water Monitor still survives in habitats that are highly disturbed. In the Dhaleswari River of Hailakandi (Assam, India), there is still a good population of the species, inhabiting the upstream stretch of the river which represents about one-half of the ~110 km total length of the river course. This varanid used to be very common throughout the region in the 1970s. However, today the species is encountered only in the 56 km stretch between Bowerghat and Shahabad (Fig. 1). During the survey, 32 individual Common Water Monitors were directly sighted in this river section, for a linear density of 0.57 individuals/km of the river course (Table 1). However, the linear density of the active nests was found to be 3.84/km, which suggests that the actual number of lizards inhabiting the river section is quite a bit higher than the number of individuals seen.

No present record of the species in the Katakhal River could be found. Since this river is much larger, with greater width, depth, flow rate, and flow discharge compared to the Dhaleswari, it further supports our assumption that the Common Water Monitor prefers smaller river habitats (Fig. 2B). In the Katakhal River, due to high flow velocity and discharge, the banks are frequently eroded in the monsoons, and thus monitor nests would be damaged. Since the species appears to use its nests repeatedly (for more than one year), larger rivers with sandy banks and prevalent erosion and landslides (Fig. 2C) would not serve as good habitats, and thus the

monitors avoid these rivers. This survey reveals that the nests are made on high grounds, which is consistent with earlier reports (Biswas and Kar 1980). The direction of the nests was found to be turned upwards in the present study area. Biswas and Kar (1980) also mentioned that the monitor seals the nest hole after laying eggs by scraping up soil, and we speculated that the half-sealed nests found in the present study area are probably similarly sealed and contain eggs that were laid.

During the present field work, some other fauna from the river section were recorded, which are prey of either the lizard or its competitors, or which prey on the eggs and hatchlings of the Common Water Monitor. Other lizards recorded from the present survey were Indian Garden Lizard (*Calotes versicolor*), Tokay Gecko (*Gekko gekko*), Bronze Grass Skink (*Eutropis macularia*), and Many-lined Grass Skink (*Eutropis multidasciata*); and the snakes included Checkered Keelback (*Xenochrophis piscator*), Red-necked Keelback (*Rhabdophis subminiatus*), Indian Rat Snake (*Ptyas mucosa*), Banded Krait (*Bungarus fasciatus*), Greater Black Krait (*Bungarus niger*), King Cobra (*Ophiophagus hannah*), Monocled Cobra (*Naja kaouthia*), Common Water Snake (*Enhydris enhydris*), and Indo-Chinese Rat Snake (*Ptyas korros*). The amphibians included Common Asian Toad (*Duttaphrynus melanostictus*), Indian Skipping Frog (*Euphlyctis cyanophlyctis*), Indian Bull Frog (*Hoplobatrachus tigerinus*), and Common Tree Frog (*Polypedates teraiensis*). The fishes recorded from the river were *Sperata aor*, *Sperata seenghala*, *Channa punctatus*, *Notopterus notopterus*, *Clarias batrachus*, *Heteropneustes fossilis*, *Pethia ticto*, and *Anabas testudineus*. The common fishes cultured by the local people in the ponds and fisheries in the adjoining areas (which are often prey of the Common Water Monitor) were *Labeo rohita*, *Clarias gariepinus*, *Ctenopharyngodon idella*, *Cyprinus carpio*, *Gibelion catla*, *Hypophthalmichthys molitrix*, and *Labeo calbasu*.

The water monitor of Dhaleswari River faces immense threats, which include anthropogenic pressures in terms of over-fishing, construction of dikes, conversion of the river into fisheries (Fig. 2E), cultivation of crops, and fencing of potential cultivable areas on the bank. Further, the species is frequently hunted as well as persecuted as a pest (Fig. 3). Thus, habitat destruction, hunting, and retaliatory killings are the major conservation issues in the present study area. These threats, in addition to others, have extirpated the other majestic aquatic mega-fauna of the river, including the Ganges River Dolphin *Platanista gangetica gangetica* (Mazumder et al. 2014). In spite of all these potential pressures, the Common Water Monitor could survive well in the river thanks to certain attributes, most notably its higher adaptability to human-modified habitats and wider food niche. In fact, the Common Water Monitor of Dhaleswari River is more common in town areas, where the dumping of municipal wastes provides better provisions for this lizard.

Moreover, the many poultry farms on the river banks deliberately dispose of dead birds near the nests of the lizards. In some areas where the monitor is deliberately or incidentally provisioned, it is often concentrated.

The Indian Wildlife (Protection) Act (1972) listed the species under Schedule I, thereby conferring maximum legal protection. Although the IUCN regards this species to be stable and considers it 'Least Concerned' (LC), the status of the population in southern Assam (India) is decreasing. Thus, the river section between Shahabad and Bowerghat requires special care, by limiting anthropogenic pressures. The Assam Fishery Rules (1953) should be enforced, as they restrict fishing of brood fishes in the spawning season, and prohibit fishing using specific methods in specific seasons, including dewatering, which will enhance fish stock. The construction of dikes, encroachment, and pollution of the river should be checked, and sewage should be treated before discharge. Hunting should be strictly dealt with and the relevant legislation should be strictly enforced. The people who consume the meat and use the oil of the lizards, should be motivated to stop doing so through education and outreach programs. The ecology, population status, distribution, and threats of the Common Water Monitor need to be properly evaluated and a specific long-term conservation action plan should be devised. Government and non-government organizations should come forward to work together for the conservation of this lizard. Above all, we as human beings and the dwellers of the Indo-Burma Biodiversity hotspot region should endeavor to save our pristine wildlife assemblage, or else the Common Water Monitor will be the next large reptile, after the Gharial and Marsh Crocodile, to become extirpated from southern Assam, India.

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